Goddard Procedural Requirements (GPR)

DIRECTIVE NO.	GPR 1700.1B	**APPROVED BY Signature:**	Original Signed By
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EXPIRATION DATE:	November 8, 2017	**TITLE:**	Director, Safety and Mission Assurance

COMPLIANCE IS MANDATORY

Responsible Office: 350 / Occupational Safety and Health (OS&H) Division

Title: Occupational Safety Program at Goddard Space Flight Center

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PREFACE

P.1 PURPOSE

This directive is an overarching document containing procedures and requirements that defines the Goddard Space Flight Center (GSFC) Occupational Safety Program. Specific and detailed safety program requirements will be developed by the respective division/organization to address operational activities. This document shall be used in conjunction with the applicable documents listed in P.4 below. To address special and/or discipline unique requirements, the Headquarters Office of Safety and Mission Assurance publishes standards that provide specific instructions that are beyond the scope and detail of this document.

P.2 APPLICABILITY

This directive applies to all GSFC civil service personnel, facilities, and activities, including all permanent and temporary sites. This directive shall also apply to all GSFC tenant organizations, contractors, grantees, clubs and other persons operating under the auspices of GSFC or on GSFC property as required by law and as directed by contractual, grant, and agreement documents. The term OS&H Division is applicable equally to both the Greenbelt (Code 350), and Wallops Flight Facility (WFF, Code 803) safety organizations.

P.3 AUTHORITIES

a. Executive Order 12196 of February 26, 1980, Occupational Safety and Health Programs for Federal Employees
b. Executive Order 13043 of April 16, 1997, Increasing Seat Belt use in the United States
c. 5 USC Section 7902, 29 USC Sections 651 et seq., and 49 Appendix Section 1421, the Occupational Safety and Health Act of 1970 (Public Law 91-596)
d. 40 USC Section 6199, Section 6(a) Public Building Amendments of 1988 (Public Law 100-678)
e. 51 USC 20113(a) of the National Aeronautics and Space Act
f. 29 CFR 1910, Occupational Safety and Health Standards
g. 29 CFR 1926, Construction Safety
h. 29 CFR 1960, Basic Program Elements for Federal Employees, Occupational Safety and Health Programs and Related Matters
i. NPR 8715.3, NASA General Safety Program Requirements

P.4 APPLICABLE DOCUMENTS

a. NPD 1440.6, NASA Records Management
b. NPD 1800.2, NASA Occupational Health Program
c. NPD 6000.1, Transportation Management
d. NPR 1800.1, Requirements for the Conduct of NASA Research and Technology (R&T)
e. NPR 4100.1, NASA Materials Inventory Management Manual
f. NPR 4200.1, NASA Equipment Management Procedural Requirements

g. NPR 7120.5, NASA Program Management and Project Management Processes and Requirements
h. NPR 8621.1, NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating and Record Keeping
i. NPR 8715.1, NASA Occupational Safety and Health Programs
j. NPR 8715.2, NASA Emergency Preparedness Plan Procedural Requirements
k. GPD 8715.1, Goddard Space Flight Center Safety Policy
l. GPR 1400.1 Waiver Processing
m. GPR 1700.2, Chemical Hygiene Program
n. GPR 1700.5, Control of Hazardous Energy (Lockout/Tagout)
o. GPR 1700.6, Confined Space Program at GSFC
p. GPR 1700.7, Electrical Safety
q. GPR 1700.8, GSFC Hazard Communication Program
r. GPR 1800.6, Occupational Health, Medicine, and Employee Assistance Programs
s. GPR 1820.1, Hearing Conservation
t. GPR 1820.2, Respiratory Protection
u. GPR 1840.1, Asbestos Management Program
v. GPR 1840.2, Industrial Hygiene Program
w. GPR 1860.1, Ionizing Radiation Protection
x. GPR 1860.2, Laser Radiation Protection
y. GPR 1860.3, Radio Frequency Radiation Protection
z. GPR 1860.4, Ultraviolet and High Intensity Light Radiation Protection
aa. GPR 1870.1, Food Service Sanitation, Inspection, and Food Borne Illness Prevention
bb. GPR 3410.2, Employee Task-Specific, Required and Mandatory Training Requirements
cc. GPR 7320.1, Facilities System Safety
dd. GPR 8500.3, Waste Management
ee. GPR 8621.4, GSFC Mishap Preparedness and Contingency Plan
ff. GPR 8710.3, Certification and Recertification of Ground-Based Pressure Vessels and Pressurized Systems
gg. GPR 8710.7, Cryogenic Safety
hh. GPR 8710.8, GSFC Safety Program Management
ii. GPR 8715.1, Processing of NASA Safety Reporting System (NSRS) Incident Reports
jj. GPR 8715.2, Aviation Safety Program
kk. GPR 8715.3, Wallops Flight Facility Executive Safety and Health Council
ll. GPR 8715.5, Fire Protection at GSFC Greenbelt
mm. GPR 8715.8, Fall Protection Requirements for GSFC
nn. GPR 8715.9, Contractor Safety Program
oo. GPR 8719.1, Certification and Recertification of Lifting Devices and Equipment and it's Operators
pp. GPR 8834.1, Lifting Operations Requirements
qq. NASA-STD-8719.7, Facility System Safety Guidebook
rr. NASA-STD-8719.10, Standard for Underwater Facility and Non-Open Water Operations
ss. NASA-STD-8719.11, Safety Standard for Fire Protection
tt. NASA-STD-8719.12, Safety Standard for Explosives, Propellants, and Pyrotechnics

uu. GSFC Form 23-60, Job Hazard Analysis Worksheet
vv. ANSI Z117.1, Safety Requirements for Confined Space Program
ww. MIL-STD-454, Standard General Requirements for Electronic Equipment
xx. Document 316-91, Laser Range Safety
yy. NASA FAR Supplement (NFS) Part 1823 and 1852
zz. RSM 2002, Range Safety Manual for GSFC/WFF, Code 803
aaa. 803-Plan-003, WFF Emergency Operations Plan, Code 803 (Note: this document is sensitive but unclassified, with a limited distribution)
bbb. 350-WI-1700.1.1. Occupational Safety Assessment Team Audit Program

P.5 CANCELLATION

a. GPR 1700.1A, Occupational Safety Program at Goddard Space Flight Center
b. GPR 8715.6, WFF Safety, Occupational Health and Emergency Preparedness Programs

P.6 SAFETY

None

P.7 TRAINING

Supervisors shall ensure that all personnel are trained, qualified, and certified (if applicable) for the type of activity/operation required to perform their work safely and effectively.

See section 8.0 for specific occupational safety training requirements.

P.8 RECORDS

Record Title	Record Custodian	Retention
Job Hazard Analysis (GSFC Forms 23-60)	Owning Organization	NRRS 1/116* – Destroy after organization determines analysis is no longer relevant.
Annual Workplace Safety and Health Inspection/Audit Reports	Occupational Safety and Health (OS&H) Division	29 CFR 1960.73 - Records and reports shall be retained for 3 years following the end of the fiscal year to which they relate.
Supervisor Safety Walkthrough	Supervisors	29 CFR 1960.73 - Records and reports shall be retained for 5 years following the end of the fiscal year to which they relate.
Completed NASA Form 1584 – Hazard Abatement Plan	OS&H Division	29 CFR 1960.73 - Records and reports shall be retained for 5 years following the end of the fiscal year to

		which they relate.
Completed NASA Forms 1390 Notice of Unsafe or Unhealthful Condition	OS&H Division	29 CFR 1960.73 - Records and reports shall be retained for 5 years following the end of the fiscal year to which they relate.

**NRRS – NASA Records Retention Schedules (NPR 1441.1)*

P.9 MEASUREMENT/VERIFICATION

The respective OS&H Division will gather and monitor, as a minimum, trends and lessons learned which will be provided to Center organizations and briefed to senior GSFC management as necessary.

a. Completion percentage of annual safety findings;
b. Analysis of lost-time and occupational illness incidents and property damage; and
c. Analysis of annual safety findings by hazard type.

PROCEDURES

In this document, a requirement is identified by "shall," a good practice by "should," permission by "may" or "can," expectation by "will," and descriptive material by "is."

1.0 OVERVIEW

This document provides the guidelines and requirements that define the GSFC Safety Program. Safety program responsibility starts at the top with senior management's role of developing policies and providing strategies and resources and is enforced by the immediate task supervisor and line organization. All employees are responsible for their own safety, as well as that of others whom their actions may affect. All employees, including contractors, are empowered to call for the cease and desist of any process or operation they believe is unsafe, or presents an immediate danger to life and health, and request an analysis of an unsafe situation. If the activity is unsafe, the appropriate supervisor or the safety professional will determine the corrective actions needed before resumption of operations. Employees are also to report any systems, designs, operations, processes, or software they feel are unsafe or do not meet safety requirements.

1.1 Management of Risk

GSFC undertakes certain activities involving a high potential of risk. The goal of the GSFC Safety Program is to reduce risk to the greatest extent possible for GSFC workforce, visitors, the public in general, and our high-value equipment and facilities.

1.2 Program and Policies

The Safety policy for the GSFC Safety Program is provided in GPD 8715.1. For specific health program requirements, see NPR 1800.1, and GPR 1800.6.

2.0 OBJECTIVES AND PRINCIPLES

The objectives of GSFC's Safety Program are to affect positively the overall success rate of missions and operations and to prevent injury to personnel, loss of or damage to property, loss of technical stature, or environmental harm. Requisite program principles include the following:

a. An independent safety function for GSFC to ensure that its programs/projects are accomplished with proper safety planning;
b. Planning, direction, development of requirements, policies, methodology, procedures, implementation, and evaluation of the safety program to ensure its goals are achieved effectively and efficiently;
c. Compliance with the safety standards issued by the Occupational Safety and Health Administration (OSHA) pursuant to Section 6 of Public Law (PL) 91-596 (the Occupational Safety and Health Act of 1970 as amended), 29 USC Section 655. If no OSHA standards apply, GSFC will develop its own supplementary or alternate standards for safety and mission assurance to support its unique operations, materials, facilities, equipment, procedures, and practices. See NPR 8715.1 for further information on the policy for all NASA Technical Standards;
d. Technical reviews by the developing organization of the safety aspects of all development efforts and operations to ensure that they are being conducted in accordance with sound safety-engineering principles;
e. Safety assessments of all systems prior to changes so as to preclude an increase in risk to personnel or equipment. Assessments of both qualitative and quantitative safety risks to people or property along with recommendations to either reduce the risks or accept them. Final risk acceptance is a management responsibility. However, employees have the right to be informed of the risk acceptance process if it affects their personal safety or health;
f. Investigation of all hazardous conditions, close calls, environmental incidents, and mishaps, without retribution to the employees, and the prompt publication of lessons-learned as part of accident prevention and a continuous improvement effort. Procedures for mishap and close call reporting are found in GPRs 8621.4 and Investigation and NPR 8621.1; and
g. Safety oversight/insight and periodic inspection to ensure compliance with safety policies and assess the effectiveness of GSFC safety activities as required by NASA policy and national consensus standards.

3.0 ROLES AND RESPONSIBILITIES

The NASA Chief Medical Officer is the Designated Agency Safety and Health Official (DASHO), pursuant to Executive Order 12196, Section 1-102. The DASHO coordinates the NASA Occupational Safety and Health Programs (reference NPR 8715.1). The authority and responsibility for safety policy and oversight of its implementation are vested in the Safety and Risk Management Division within the

Safety and Mission Assurance (SMA) Directorate. Overall responsibility for safety at GSFC rests with the Center Director.

3.1 Center Director shall:

a. Ensure that the safety organization is placed at a high enough level (is interpreted to mean that the Functional Director can interface directly with the Center Director when problems arise), and the program implementation authority is vested in a person sufficiently senior to manage the effort so the safety review function can be conducted independently.
b. Ensure that adequate resources are made available to support the safety efforts and that the safety responsibilities of each organizational element are properly emphasized and accomplished. Proper safety organizational alignment will support the importance of safety at all organizational levels;
c. Ensure that senior GSFC managers incorporate safety considerations into the planning and execution of programs, projects, and operations in their management function;
d. Hold managers accountable for the direct safety of their workers by incorporating measurable performance criteria in performance plans and evaluate and document results in their performance evaluations. This responsibility extends to any place where their employee(s) are engaged in work related to his/her job, including international and extraterrestrial locations; and
e. Ensure no employee is subjected to restraint, interference, coercion, discrimination, or reprisal for filing a report of an unsafe or unhealthful working condition, participation in the activities of the Agency's occupational safety and health programs, or the exercise of any right or privilege afforded by Section 19 of the Act, Executive Order 12196, or 29 CFR Part 1960.

3.2 Supervisors shall:

Comply with the requirements listed in GPD 8715.1, Section 5 and:

a. Furnish a safe and healthy place of employment and ensure that identified hazards are eliminated or controlled through a rigorous proactive inspection and abatement process. Assure that a safe and healthful workplace is maintained through active coordination with and support to the designated Facility Operations Manager (FOM) and Building Manager;
b. Ensure all personnel obtain safety-related training and necessary certifications for the tasks they will be performing, prior to being assigned to the task (this includes any matrixed and co-located employees assigned to their workplace). Ensure employees are informed of hazards associated with the workplace and ensure use of appropriate personal protective equipment (PPE);
c. Ensure job hazard analyses (JHAs) and procedures are written and updated, as required, for critical and/or hazardous operations including non-routine or infrequently performed operations;
d. Ensure that NASA employees are provided safety and health training and PPE as applicable to the work environment. Contractor support employees are required by NASA and Federal Procurement Law to have the appropriate safety training/certifications provide by their company before they begin work;
e. Cooperate with and assist safety and health personnel while they are performing their duties as specified in the NASA OS&H program;
f. Ensure timely reporting of mishaps and close calls and timely follow up of any corrective actions;

g. Ensure appropriate safety and mission assurance requirements are included in procurement, design, development, fabrication, test, or operations of systems, equipment, and facilities and will serve as a basis for awarding any fee on contracts;
h. Consult OS&H Division personnel in the procurement process for the acquisition of hardware, services, materials, and equipment with safety implications;
i. Ensure employees have access to information about and participation in the Safety and Health Program;
j. Ensure, as a minimum, Semiannual Office Safety Walkthrough Audits and Quarterly Non-Office Space safety walkthroughs of their work areas/operations are accomplished and that any noncompliance findings are recorded on a tracking log. Ensure hazards are controlled and/or corrected to eliminate injury to personnel or property;
k. Attend Safety and Health classes/courses, as applicable, when scheduled by the Office of Human Capital Management; and
l. Ensure that any matrixed and/or co-located employees assigned from their organization to another host organization are provided with a safe and healthful environment. This means having direct communication with the gaining supervisor and, if required, physically assessing their employees new worksite for potential hazards.

3.3 **Employees** shall:

a. Comply with the task specific requirements;
b. Have access to and review inspection reports, Job Hazard Analyses of work operations, associated job safety and health documentation, and accident investigations;
c. Be empowered to cease any process or operation they believe is unsafe and request analysis by a qualified individual. Qualified individual will determine the corrective actions needed (if any) and when the process or operation may be resumed; and
d. Attend all initial and refresher safety and health training as mandated by Federal, NASA, and GSFC occupational work standards/requirements. Failure to do so, within a reasonable schedule, will result in the suspension of the employees work activities until the training is completed.

3.4 **Greenbelt Occupational Safety and Health Division (OS&H)**

The OS&H Division shall:

a. Exercise oversight authority to ensure the implementation of overall OSHA, NASA and GSFC safety policies, regulations, standards, and procedures;
b. Provide specialized assistance to employees and all levels of management;
c. Provide support and assistance in:
   (1) Occupational Safety
   (2) Fire Protection
   (3) Industrial Hygiene/Chemical Safety
   (4) Mishap Investigation and Process
   (5) Education and Awareness
   (6) Safety Management System

(7) Contractor Safety Program Oversight
(8) Facilities System Safety
(9) Radiation Safety
(10) Cryogenics Safety
(11) Public Safety

d. Establish a formal schedule of audits for all operations/facilities;
e. Inspect all active areas and operations of each establishment at least annually. More frequent inspections will be conducted in all establishments where there is an increased risk of accident, injury, or illness due to the nature of the workplace;
f. Responsible for the determination of qualified personnel;
g. Ensure sufficient unannounced inspections and unannounced follow-up inspections are conducted to ensure the identification and abatement of hazardous conditions; and
h. Provide resources to conduct special inspections at the request of safety and health committees, employees or their representatives, or upon notice of an unsafe or unhealthful condition.

The OS&H Division inspectors shall:

a. Meet the qualifications as defined in 29 CFR 1960.2 and NPR 8715.3;
b. Have sufficient documented training and experience in safety and health necessary for the recognition, evaluation, and general abatement procedures of health and safety hazards;
c. Complete a thorough inspection of any facility, structure, operation, vehicle, or equipment that is in an inactive status to identify potential hazards prior to returning to service or occupation;
d. Conduct annual workplace inspections in accordance with 29 CFR 1960.26; and
e. Formally assess the Centers' Safety Programs periodically in addition to normal management surveillance, competent and qualified safety personnel through safety staff assistance visits, audits, and process verification evaluations.

3.5 Wallops Flight Facility (WFF) Safety Office (Code 803)

The WFF Safety Office shall develop and maintain safety, occupational health, and emergency preparedness program elements designed to ensure a safe and healthful work environment for WFF employees, tenants, and visitors in accordance with GSFC and Agency directives including:

a. Occupational Safety;
b. Fire Protection;
c. Industrial Hygiene/Chemical Safety;
d. Mishap Investigation and Process;
e. Education and Awareness;
f. Safety Management System;
g. Contractor Safety Program Oversight;
h. Facilities System Safety;
i. Radiation Safety;
j. Cryogenics Safety;
k. Public Safety;

l. Emergency Management and Preparedness;
   (1) Emergency Management Coordinator
m. Range Safety; and
n. Emergency Services.

3.6 WFF Emergency Management Coordinator

The Emergency Management Coordinator (EMC) reports to the WFF Director and shall:

a. Coordinate the WFF Emergency Management Program with the Greenbelt Emergency Management Program Coordinator;
b. Develop a WFF Emergency Operations Plan (EOP) as per requirements defined in NPR 8715.2;
c. Facilitate preparation and maintenance of emergency action plans, training plans, and support contingency plans for special equipment and facilities, such as the Emergency Operations Center (EOC);
d. Provide advice and assistance to WFF personnel and support contractors regarding emergency preparedness, response, and planning;
e. Analyze the emergency skills needed by WFF and identify the training necessary to provide those skills;
f. Prepare and maintain an inventory of assets to support emergency preparedness;
g. Serve as a liaison between GSFC/Greenbelt EPC, and local emergency management organizations;
h. Support the GSFC vital records program as described in NPD 1440.6;
i. Brief appropriate WFF senior management and officials concerning their roles in emergency preparedness;
j. Arrange for mutual aid with outside jurisdictions, through proper legal channels, as required;
k. Coordinate with the Accomack County Department of Public Safety concerning emergency responses to community wide disasters and mutual aid agreement implementation;
l. Receive and disseminate warning information to senior management, the Public Affairs Office, and employees, as requested; and
m. Provide advice and assistance to other organizations in preparing their assigned Emergency Management Annexes as part of the WFF EOP.

3.7 Public Safety

A priority of GSFC is to protect the public from any adverse effects of GSFC operations. The Center Director, program/project managers, and line supervisors will strive to eliminate the risk or the adverse effect of GSFC operations on the public. Where GSFC cannot do this, GSFC will provide protection by exclusion or other protective measures. If there is likelihood that the public and surrounding communities could be affected by GSFC operations, GSFC safety and emergency planning officials will establish cooperative programs with the local communities and shall perform the following:

a. Ensure community awareness regarding the nature and extent of actual and potential hazards arising from the GSFC operations and the measures to be taken to protect the community;

b. Jointly develop emergency response plans, including protective action guides, to address the effects posed by hazards from radiological contamination, explosive/propellant mishaps, and toxic chemical spills;
c. Participate in community safety activities and cooperate with local authorities to develop response plans to contend with natural disasters such as tornadoes, hurricanes, and floods; and
d. Require research personnel who are neither contractors nor visitors with access to GSFC facilities to conduct individual research under grants or cooperative agreements to follow all GSFC and NASA safety requirements if their work involves exposure to hazardous operations. These research operations should not be allowed to interfere with or damage GSFC facilities or operations. Also, if these personnel will be operating or using potentially hazardous GSFC equipment, they will receive training and be certified as a qualified operator in accordance with Section 8 of this document.

4.0 RISK ASSESSMENT

The primary purpose of risk assessment is to identify and evaluate risks to support decision-making regarding actions to ensure safety and mission success as well as to support decision-making in other areas, such as selection of contract type, development of fee incentives and surveillance plans, and information security. The decision (based on all relevant factors) to accept a hazard with its associated risk is a line management responsibility but shall:

a. Require coordination with the appropriate safety official;
b. Communicate to the next higher management level for review, when a decision is made to accept a hazard with its associated risk; and
c. Consider the probability of a mishap coupled with the severity of the possible consequences as discussed in detail in GPR 7320.1.

Personnel conducting risk assessment analysis shall use the simplest methods that adequately characterize the probability and severity of undesired events. Qualitative methods that characterize hazards and failure modes will be used first. Quantitative methods will be used when qualitative methods do not provide an adequate understanding of failure causes, probability of undesired events, or the consequences of hazards or potential failures.

5.0 SAFETY PROGRAM REVIEWS

In addition to normal management surveillance, competent and qualified safety personnel through safety staff assistance visits, audits, and process verification evaluations will formally assess the Centers' Safety Programs periodically. Safety representatives, or an independent outside source, may perform the formal assessments. These assessments shall:

a. Evaluate the effectiveness of the Safety Management System;
b. Evaluate the implementation of Public Law 91-596, The Occupational Safety and Health Act of 1970, as amended; EO 12196, Occupational Safety and Health Programs for Federal Employees, as amended; OSHA Regulations at 29 CFR 1910, Occupational Safety and Health Standards, and other pertinent Federally mandated requirements;

c. Identify hazards and deficiencies in the safety program;
d. Evaluate the effectiveness of the abatement process;
e. Determine the adequacy of safety standards and procedures;
f. Observe compliance with safety practices; and
g. Verify corrective actions from previous assessments.

5.1 Review Categories

Three types of qualitative assessments are described below:

a. Safety staff assistance visits are informal onsite evaluations by specialists and safety personnel who, after making spot checks and/or sampling and holding discussions with appropriate levels of management, provide assessments to the affected organization;
b. Safety Audits are in-depth technical reviews conducted at the working or facility level to assess the compliance with safety policies and standards that apply to the particular workplace. The safety inspection team shall provide formal reports to the appropriate management level responsible for correcting the deficiencies; and
c. Compliance Verification Audits are documented Headquarters-level reviews performed in accordance with pre-approved subject area outlines to verify, by examination and evaluation of objective evidence, whether required safety and mission assurance program elements are in place and functioning. Although the process verification team provides a written report, specific written responses are not required. Corrective actions are documented through normal reporting processes and follow-up assessments.

5.2 Notice and Abatement of Unsafe or Unhealthful Conditions

The receipt of information concerning unsafe conditions at GSFC, whether received through a report from an employee and verified, or as a result of a workplace inspection, will require the issuance of a Notice of Unsafe or Unhealthful Condition (NF 1390) if the condition is a Risk Assessment Code of 1 or 2 (see GPR 7320.1) and may require a NASA Safety and Health Hazard Abatement Form (NF 1584) or equivalent forms. Imminent danger issues will be addressed in accordance with 29 CFR 1960.26, Conduct of Inspections (see NPR 8715.1 for more information). Inspection requirements vary according to the type of unsafe or unhealthful conditions that are reported and will be conducted in accordance with 350-WI-1700.1.1.

An Abatement Plan (NF 1584 or equivalent) is required for hazards that cannot be abated within 30 days and is the responsibility of the supervisor in charge of the operation, space, or personnel. In all cases, operations shall not proceed until alternative procedures are in place to provide temporary mitigation or reduction of the risk to acceptable levels.

Upon request of the employee, his or her name will not be disclosed except to the OS&H Division in connection with the report of a suspected unsafe or unhealthful condition. All written reports and imminent danger oral reports of unsafe or unhealthful conditions will be recorded as received by the

OS&H Division and a file maintained as to the disposition. (Electronic versions are acceptable for recordkeeping purposes).

The notice will be sent to the supervisor in charge of the establishment for correction (and posting if directed by the OS&H Division). The OS&H Division will establish closed-loop procedures to ensure necessary follow-up and correction.

5.3 Access for Federal Regulatory Representatives

a. Official representatives of OSHA or other Federal Regulatory Agencies are authorized to enter NASA establishments for purposes of inspection and/or evaluation of conditions therein. The NASA DASHO or designee shall be notified immediately of any Federal Regulatory Agency inspection or visit;
b. Access to security controlled areas will be coordinated with the Center Security Division. Such representatives will be required to present appropriate identification, receive necessary security clearance, and be escorted during their visits;
c. OSHA and NIOSH representatives will be provided, upon request, available safety and health information on GSFC or Component Facility to be visited; and
d. Arrangements will be made for such officials to interview and be accompanied by employees or representatives of employees during their visit. Within 10 working days following written notification of findings of an inspection by OSHA or an evaluation by NIOSH, GSFC will provide a summary of any findings and corrective action necessary to the DASHO.

5.4 Advisory Panels, Committees, and Boards

It is GSFC's intent that maximum use be made of the Nation's most competent safety resources. In keeping with this philosophy, GSFC may enlist consultants, interagency and interdisciplinary panels, and ad hoc committees, consisting of representatives from industry (management and union), universities, and Government (management and union), to review and advise on the needs of the GSFC Safety Program. For a complete list of safety resources, see NPR 8715.3, Section 1.11.

5.4.1 Goddard Safety Committee

See GPR 8710.8, section 1.6 for information on the GSFC Safety Committee.

5.4.2 Subordinate Safety and Health Committees

See GPR 8710.8, section 1.7 for information on the GSFC Safety Committee. Standing safety committees at GSFC are listed in GPR 8710.8. Subordinate committees at WFF include the Executive Safety and Health Committee, Contractor Safety Committee, and the Aviation Safety Committee.

5.5 Safety Management Information

Efficient communication of safety information is necessary to meet the needs of safety officials and the managers they support. This includes communications between and among operational and safety organizations.

a. The OS&H Division (Code 350) and WFF Safety Office (Code 803) will pursue effective means for communicating verbal and written safety management information, lessons learned, and statistics;
b. Examples of information systems are the Incident Reporting Information System (IRIS) and the Lessons Learned Information System (LLIS); and
c. Corrective measures and lessons learned will be developed by utilizing records and reports of accidents, occupational injuries, incidents, failure analyses, identified hazards, mishaps, appraisals, and like items.

5.6 Mishap Reporting

The GSFC Occupational Safety and Health Program is designed to prevent injury and damage to facilities and equipment; however, moments of inattention or miscalculation can result in a mishap or close call.

In the event of a mishap or close call employees/contractors/tenants shall:

a. Dial 911 from any landline for emergency response, if required. If calling from a cell phone dial 301-286-9111 at Greenbelt and 757-824-1333 at WFF;
b. Immediately report mishaps and close calls to the appropriate supervisor as specified in GPR 8621.4; and
c. Notify their Contracting Officer's Technical Representative (COTR) as applicable.

In addition, program/project managers are required to develop Program/Project Mishap Preparedness and Contingency Plans that addresses the responsibilities and procedures required in the event of mishaps and close calls that occur onsite, offsite, at offsite program/project contractor sites, or in-flight (as defined by NPR 7120.5 and NPR 8621.4).

5.7 Injury Recordkeeping and Reporting Requirements

GSFC shall maintain detailed records of occupational injuries that are reported to OSHA in accordance with 29 CFR 1960, Subpart I, and NPR 8621.1. Employees are allowed access to a summary of center statistical data and their medical exposure records in accordance with 29 CFR 1960. To obtain the information, contact the OS&H Division at Greenbelt and the Safety Office at WFF.

5.8 Safety Lessons Learned

The distribution of safety lessons learned is vital to improving understanding of hazards, preventing the occurrence of accidents, and suggesting improved practices of developing and implementing processes and procedures.

a. Safety lessons learned during the performance of work activities or mishap/close call investigations should be developed and disseminated by the Code experiencing the event to managers and throughout NASA Centers and Headquarters by responsible personnel;
b. Affected managers will contribute appropriate information to the LLIS. The LLIS should provide a library of lessons learned data for use by program managers, design engineers, operations personnel, and safety personnel. Procedures for disseminating lessons learned are found at http://llis.nasa.gov/;
c. Affected managers should also include this information in program, procurement, and Center newsletters to communicate more effectively with other management entities; and
d. Lessons learned that indicate the need to revise source documents (e.g., policies, procedures, specifications, and standards) will be submitted directly to the person(s) preparing the document.

5.9 NASA Safety Reporting System (NSRS)

GSFC responsibilities for the NSRS process are documented in GPR 8715.1

5.10 Safety Directives

a. The Headquarters (HQ) documentation tree represents the Safety and Mission Assurance top-level NASA Policy Directives, NASA Procedures and Requirements, applicable NASA Technical Standards, and other top-level documents in the NASA Safety Program. The Safety and Mission Assurance documentation tree is posted on the Internet at http://www.hq.nasa.gov/office/codeq/doctree/index.htm; and
b. GSFC Occupational Safety and Health directives are found on the Goddard Directives Management System (GDMS) Menu.

5.11 Safety Waiver Process

Any and all waivers shall be completed in accordance with GPR 1400.1.

6.0 RECORDKEEPING AND REPORTING REQUIREMENTS

See the records retention schedules in P.8.

Annual Summary – The annual summary shall contain but not limited to the following elements:

a. OSHA 300 records;
b. Total Case Incident Rate;
c. Days Away From Work Incident Rate;

d. Recordable Onsite Vehicle Incidents; and
e. Other items as deemed necessary by NASA HQ SMA.

The annual summary will be forwarded to the DASHO or designee within 30 days following the end of the calendar year.

6.1 Resolution of Complaints:

Appeal Process - Where an employee has made a report of a suspected unsafe or unhealthful condition to his/her supervisor and is dissatisfied with the abatement action taken, the following appeal options shall be available:

a. Center Safety/Health Official(s), as appropriate;
b. Center Director or Director of;
c. Center Ombudsman (Assistant Director for Safety and Security);
d. Designated Agency Safety and Health Officer for NASA;
e. NASA Safety Reporting System (NSRS); and
f. Office of Federal Agency Safety and Health Programs – OSHA/Department of Labor (DOL).

Complaints or grievances may also be registered through the NASA grievance procedures, through those procedures contained in agreements negotiated with recognized labor organizations or through the NASA Office of Inspector General.

7.0 CONTRACTOR SAFETY AND RISK MANAGEMENT REQUIREMENTS FOR NASA CONTRACTORS

Contractor safety programs shall comply with GPR 8715.9, Contractor Safety Program.

8.0 SAFETY TRAINING AND PERSONNEL CERTIFICATION

Safety training and personnel certification shall follow the requirements set forth in NPR 8715.3 Chapter 7 and GPR 3410.2.

9.0 OPERATIONAL SAFETY

The purpose of this section is to protect the public, flight, ground, laboratory, the environment, spacecraft payloads, and property from operations-related safety hazards. This section is not inclusive of all regulations and requirements governing operations. References are indicated liberally throughout the text for detailed or working standards, specifications, and other references.

9.1 Motor Vehicle Safety

Motor vehicle operations shall comply with NPR 8715.3 and are enforced by Code 240, Protective Services Division and Code 270, Information and Logistics Division.

a. Federal employees will use seat belts while on official business as required in Section 1 of Executive Order (EO) 13043 of April 16, 1997, Increasing Seat Belt Use in the United States. The EO states seat belt use is required by Federal employees operating or in any vehicle with seat belts while on Federal business. All GSFC employees will comply with this mandatory requirement while traveling on official business;
b. All occupants of motor vehicles (so equipped) operated on GSFC property, including delivery vans and trucks of all sizes, will have their seat belt properly fastened around themselves at all times the vehicle is in motion; and
c. Use of hand-held wireless phones is prohibited by NASA employees when driving motor vehicles owned, leased, or rented by the Federal Government per NPR 8715.3.

9.2 Personal Protective Equipment (PPE)

9.2.1 Procurement

Division Chiefs and line managers are authorized to purchase PPE after the purchase request has been reviewed by a safety and health professional to determine proper specifications and adequacy of protection appropriate.

9.2.2 Issuance

PPE shall:

a. Be issued to all GSFC Civil Service employees exposed to known hazards;
b. Accountability will be in accordance with NPR 4200.1. Transients or visitors may be furnished PPE on a temporary basis if they are on site for GSFC-related business purposes or at NASA's invitation. The host, guide, or area supervisor will be responsible for obtaining, issuing, and recovering the PPE. Other non-GSFC, contractor, and other personnel will procure their own PPE to provide an equivalent level of safety as required by NASA, GSFC, and Federal safety standards;
c. Be provided, used, stored, and maintained, and employees trained in its use, in accordance with 29 CFR 1910.132 through 1910.137; and
d. Be stocked and issued as specifically directed in NPR 4100.1; and Health-related PPE. If respirators are needed, GSFC has a formal Respiratory Protection Program. The Industrial Hygiene Office provides guidance and assistance for purchasing, training, selection, and qualification for use of respiratory protective devices and other health-related PPE.

9.3 Control of Hazardous Energy (Lockout/Tagout Program)

GSFC shall meet or exceed OSHA minimum performance requirements for the control of hazardous energy as outlined in 29 CFR 1910.147. GSFC has established a program for controlling hazardous energy during service and maintenance operations where the unexpected energizing or startup of equipment could cause injury to employees or equipment damage. The GSFC program complies with all aspects of 29 CFR 1910.147 for electrical, pressure, hydraulic, pneumatic, and mechanical systems as

a minimum. For lockout/tagout procedures, refer to the specific organizational written Control of Hazardous Energy Program document and GPR 1700.5.

9.4 Pressure and Vacuum Systems Safety

GSFC's program for ensuring the structural integrity of pressure vessels and pressurized systems (PV/S) and minimizing the associated mishap potential is outlined in GPR 8710.3. This directive assigns responsibilities for the various aspects of the program; references the codes, standards, guides, and Federal regulations that shall be followed; and establishes unique NASA requirements in areas such as certification/recertification, documentation, configuration management, and operator training/certification.

9.5 Electrical Safety

GSFC electrical systems shall be designed in accordance with the National Electric Code, GPR 1700.7 Electrical Safety, and MIL-STD 454, Standard General Requirements for Electronic Equipment. Electrical systems will be operated and maintained to adequately control hazards that are likely to cause death or serious physical harm or severe system damage.

GSFC organizations engaged in electrical operations will develop an electrical safety procedures and guidelines program document that delineates safe work methods, and assigns responsibilities for complying with OSHA, National Electrical Code, and other associated national consensus standards.

9.6 Hazardous Material

Storage and use of hazardous materials shall:

a. Comply with GPR 1700.8, Hazard Communication Program.
b. Comply with Federal and State regulations in addition to GPR 8500.3, Waste Management for disposal, and
c. Address the requirements for release prevention, control, countermeasures, contingency planning, and a listing of restricted/prohibited materials for purchasing and use at GSFC.

Inventories should be conducted at least annually and conditions of materials in storage assessed at least monthly, and those determined to be unsuitable for use removed from active inventory.

GSFC policy for transporting hazardous material or hazardous or radiological waste shall be incompliance with NASA's agency policies contained in NPD 6000.1, Transportation Management.

9.7 Job Hazard Analysis (JHA)

Generally, all hazardous operations shall require JHAs (these are also known as Job/Task Safety Analysis, Hazardous Operation Procedures, etc.). JHAs consist of a detailed plan listing step-by-step functions or tasks to be performed on a system or equipment to ensure safe and efficient operations.

Because of its in-depth and detailed nature, the JHA can identify less obvious potential hazards that may go undetected during routine management observations or audits.

9.7.1 Required JHA development - Each Directorate shall identify hazardous operations/jobs and assess, analyze, and develop adequate safety controls.

All JHAs developed for GSFC operations will have a concurrence from the responsible development official and an approval signature to certify that a review has been performed by the appropriate organizational or contractor safety representative as applicable to include any and all deviations or changes to the JHAs.

9.7.2 Help developing JHAs - For help with the development of the analysis, use GSFC Form 23-60 and the Instructions found at http://safety1st.gsfc.nasa.gov or contact Code 350 at Greenbelt or Code 803.2 at WFF.

9.7.3 JHAs for specific hazardous operations - Certain operations (e.g., rigging, high voltage, etc.) depend on adherence to overall standards and general guidelines and specific training as opposed to JHA's for each specific operation. In these cases, specific personnel certification requirements shall be established. Personnel other than the certified operators will be excluded from exposure to the operation. Where the risk of injury is high, personnel will use the buddy system whereby an adjacent or nearby person not directly exposed to the hazard serves as an observer to render assistance.

9.7.4 JHA Review - As missions change and grow, JHAs will need to be reviewed and revised to reflect current conditions and requirements. Review a JHA if any aspect of a job changes with respect to new materials, equipment, or methods. At minimum JHAs shall be reviewed on an annual basis.

9.8 Laboratory Hazards

Laboratories meeting the definition as described in 29 CFR 1910.1450, Occupational Exposure to Hazardous Chemicals in Laboratories, shall be operated in accordance with the GSFC Chemical Hygiene Plan, GPR 1700.2, GPR 1700.8 GSFC Hazard Communication Program, and OSHA 29 CFR 1910.1450.

9.9 Lifting Safety

GSFC shall use the standards and guidelines in GPR 8834.1 and GPR 8719.1 for protecting persons and property during lifting operations. This document establishes minimum safety requirements for the design, testing, inspection, personnel certification, maintenance, and use of overhead and gantry cranes, mobile cranes, derricks, hoists, special hoist-supported personnel lifting devices, hydrasets, hooks, and slings for GSFC owned and contractor-supplied equipment used in support of GSFC operations and construction. Mobile cranes used in support of construction activities will have a RECERT/OSH division approved lift plan prior to conducting operations.

9.10 Explosive, Propellant, and Pyrotechnic Safety

GSFC uses NASA-STD-8719.12 for protecting persons and property from hazards of explosives and explosive materials, including all types of explosives, propellants (liquid and solid), oxidizers, and pyrotechnics. Industry consensus standards address the requirements for working with those substances. Explosive, propellant, and pyrotechnic operations shall be conducted in a manner that exposes the minimum number of people to the smallest quantity of explosives for the shortest period consistent with the operation being conducted. An Authority Having Jurisdiction (AHJ) for Explosives, Propellant, and Pyrotechnic operations will be designated in writing by the Center Director. Responsibilities of the AHJ are contained in NASA-STD-8719.12.

9.11 Underwater Operations Safety

NASA-STD-8719.10 shall be used by GSFC as the minimum standard to establish the safety requirements for all GSFC neutral buoyancy facilities, equipment, personnel, and operations involving underwater activities that provide simulation of a weightless environment. This standard also applies to GSFC personnel participating in underwater operations at non-NASA facilities.

9.12 Non-Ionizing Radiation

Microwave and radar protection standards are covered in various state regulations, national consensus standards, and Federal standards including 29 CFR 1910.97. This paragraph provides directives for protecting persons and property during laser use in NASA operations. The primary laser hazard to humans is eye and/or skin damage from direct exposure to the beam or specular reflection, and in some cases, viewing the diffuse reflection. Laser operations during any open-air laser scenario conducted on Department of Defense (DOD) controlled ranges or test facilities or by DOD personnel shall use Document 316-91, Laser Range Safety, for guidance. For specific GSFC requirements and policies see GPR 1860.2, GPR 1860.3, and GPR 1860.4.

9.13 Ionizing Radiation

Policies and guidance for handling, use, and storage of radioactive material are contained in directives under the purview of the occupational health organizations. See NPD 1800.2 for Agency requirements and GPR 1860.1 for GSFC policy requirements.

9.14 Confined Spaces

A confined space is any space that is large enough and so configured that an employee can enter and perform work; has limited or restricted means for entry or exit; and is not designed for continuous occupancy. Entry into confined spaces requires written procedures and authorizations. No entry into confined spaces shall be made until an assessment of that space has been made and a permit or operating procedures posted. Supervisors have overall responsibility for entry and work in confined spaces and for ensuring adherence to GPR 1700.6 Confined Space Program,

9.15 Facility Systems Safety

Facility Systems Safety utilizes safety procedures and guidelines to enhance the safety and mission success aspect of NASA's facility acquisition, construction, and activation process.

a. Existing facilities undergoing major renovations will meet national consensus codes in effect at the time of the renovations. Specific safety tasks to be accomplished to ensure safety during construction, operation, maintenance, and final disposition of the facility will be documented in accordance with the Facility System Safety GPR 7320.1; and
b. The Facility System Safety efforts for each acquisition will be tailored to include those tasks appropriate to the size and complexity of the project and associated safety risks. NASA-STD-8719.7 provides a review of the facility life cycle and the safety tasks that will be accomplished (as applicable) during acquisition, modification, test activities, facilities operations, maintenance, and disposal.

9.16 Fire Safety

GSFC shall implement a comprehensive fire safety program. This program is further defined by specific requirements and procedures found in NASA-STD-8719.11, Safety Standard for Fire Protection, and GPR 8715.5. The program generally provides for the following:

a. Providing appropriate automatic fire detection and suppression systems for all facilities containing significant hazards, mission essential equipment, or permanently housed personnel in accordance with 29 CFR 1910 Subpart L;
b. Complying with National Fire Protection Association (NFPA) and other nationally recognized building and fire safety codes and any applicable local codes in accordance with 40 U.S.C. Section 619, (Section 6(a) of Public Law 100-678, Public Buildings Amendments of 1988, November 17, 1988), as amended;
c. Ensuring employees, other than trained professional firefighters, trained volunteers, or emergency response personnel, do not fight fires except in cases where the fire is incipient in nature;
d. Adhering to the more stringent of fire safety requirements imposed by local, state, or Federal agencies; and
e. An AHJ for Fire Protection for Greenbelt and WFF will be designated in writing by the Center Director. Responsibilities of the AHJ are delineated in NASA-STD-8719.11.

9.17 Cryogenic Safety

GSFC shall implement a comprehensive cryogenic safety program. This program is further defined by specific requirements and procedures found in GPR 8710.7, Cryogenic Safety.

9.18 Construction Safety

GSFC shall require all construction activities to comply with 29 CFR 1926, Construction Safety. Use of a mobile crane in support of construction activities will be reviewed and approved by the RECERT group in accordance with section 9.9 of this document.

9.19 Fall Protection

GSFC shall implement a comprehensive fall protection program. This program is further defined by specific requirements and procedures found in NPR 8715.3, NASA General Safety Program Requirements and GPR 8715.8, Fall Protection Requirements for GSFC.

9.20 Scaffolding

Scaffolding shall be erected, used, and inspected in accordance with 29 CFR 1910 and 29 CFR 1926 requirements.

9.21 Aviation

Aviation safety applies to all aviation activities, facilities, equipment, and airspace under the cognizance of GSFC and is the responsibility of the Aviation Safety Officer located in the WFF Aircraft Office (Code 830). Aviation safety is implemented in accordance with GPR 8715.2.

9.22 Industrial Hygiene Program

GSFC shall implement a comprehensive industrial hygiene program. This program is further defined by specific requirements and procedures found in GPR 1840.2.

9.23 Hearing Conservation Program

GSFC shall implement a comprehensive hearing conservation program. This program is further defined by specific requirements and procedures found in GPR 1820.1.

9.24 Respiratory Protection Program

GSFC shall implement a comprehensive respiratory protection program. This program is further defined by specific requirements and procedures found in GPR 1820.2.

9.25 Asbestos Management Program

GSFC shall implement a comprehensive asbestos management program. This program is further defined by specific requirements and procedures found in 1840.1.

9.26 Food Service Sanitation, Inspection, and Food Borne Illness Prevention

GSFC shall implement a comprehensive food service sanitation, inspection, and food borne illness prevention program. This program is further defined by specific requirements and procedures found in GPR 1870.1.

9.27 Contractor Safety

GSFC shall implement a comprehensive contractor safety program. This program is further defined by specific requirements and procedures found in GPR 8715.9.

10.0 Range Safety

The WFF Range Safety Officer and the WFF Range Safety Branch of the WFF Safety Office are responsible for the safety of participants during WFF launch preparations and operations, as well as, the general public, including official observers. The Range Safety Branch plans, develops, and provides functional management of policies, procedures, and technical requirements for ground and flight safety for all WFF projects and missions. In addition, systems safety and engineering analysis of ground and flight safety systems, environmental conditions, and operational activities are performed to identify risk and for assessing safety, reliability, and flight worthiness of launch vehicles and payloads. The Range Safety Branch establishes and approves safety precautions for protection of personnel, property, and the public from hazards generated by ground and flight systems except for flight considerations covered by the Aviation Safety Officer. These services are provided for all WFF managed projects, both locally and at remote locations around the world.

11.0 Emergency Management and Preparedness

At the Greenbelt campus emergency management the responsibility of Code 240, Security.
At WFF, emergency management is the responsibility of Code 803.2 Safety and Mission Assurance. The WFF Emergency Operations Plan (EOP) addresses planning and operational procedures to control, mitigate, respond, and recover from local threats and disasters occurring on WFF or resulting from operations originating on WFF. The EOP establishes uniform policy guidelines for the effective mitigation of, preparation for, response to, and recovery from a variety of emergency situations. These emergency situations could have a varying degree of impact on the health, safety, and welfare of employees and visitors to the WFF. The WFF EOP is a sensitive but unclassified manual with limited distribution. It is maintained in the WFF Safety Office.

Appendix A –Definitions

A.1 **Accident** - A severe perturbation to a mission or program, usually occurring in the form of a sequence of events that can cause safety adverse consequences, in the form of death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment.

A.2 **Accident Prevention** - Methods and procedures used to eliminate the causes that could lead to a accident.

A.3 **Assessment** - Review or audit process, using predetermined methods, that evaluates hardware, software, procedures, technical and programmatic documents, and the adequacy of their implementation.

A.4 **Assurance** - Providing a measure of increased confidence that applicable requirements, processes, and standards are being fulfilled.

A.5 **Audit** - Formal review to assess compliance with hardware or software requirements, specifications, baselines, safety standards, procedures, instructions, codes, and contractual and licensing requirements.

A.6 **Buddy System** - An arrangement used when risk of injury is high, where personnel work in pairs, with one person in the pair stationed nearby, not directly exposed to the hazard, to serve as an observer to render assistance if needed.

A.7 **Catastrophic** - (1) A hazard that could result in a mishap causing fatal injury to personnel, and/or loss of one or more major elements of the flight vehicle or ground facility. (2) A condition that may cause death or permanently disabling injury, major system or facility destruction on the ground, or loss of crew, major systems, or vehicle during the mission.

A.8 **Component Facility** – Any facility that is under the management of GSFC but not located at the Greenbelt or Wallops Flight Facilities.

A.9 **Deviation** - An authorization for temporary relief in advance from a specific requirement, requested during the formulation/planning/design stages of a program/project operation to address expected situations. OSHA refers to this as an alternate or supplemental standard.

A.10 **Emergency** - Unintended circumstance bearing clear and present danger to personnel or property which requires an immediate response.

A.11 **Exposure** - (1) Vulnerability of a population, property, or other value system to a given activity or hazard; or (2) other measure of the opportunity for failure or mishap events to occur.

A.12 **Facility Hazard Analysis (FHA**) - The FHA is a preliminary hazard analysis performed during the planning and decision phases of a facility design and acquisition program. It may later be updated to become the OHA.

A.13 **Failure** - Inability of a system, subsystem, component, or part to perform its required function within specified limits.

A.14 **Failure Mode** - Particular way in which a failure can occur, independent of the reason for failure.

A.15 **Hazard** - A state or a set of conditions, internal or external to a system that has the potential to cause harm.

A.16 **Hazard Analysis** - Identification and evaluation of existing and potential hazards and the recommended mitigation for the hazard sources found.

A.17 **Hazardous Material** - Defined by law as "a substance or materials in a quantity and form which may pose an unreasonable risk to health and safety or property when transported in commerce"

(49 U.S.C S 5102, Transportation of Hazardous Materials; Definitions). The Secretary of Transportation has developed a list of materials that are hazardous which may be found in 49 CFR Part 172.101. Typical hazardous materials are those that may be highly reactive, poisonous, explosive, flammable, combustible, corrosive, radioactive, produce contamination or pollution of the environment, or cause adverse health effects or unsafe conditions.

A.18 **Hazardous Operation/Work Activity** - Hazardous Operation/Work Activity. Any operation or other work activity that, without implementation of proper mitigations, has a high potential to result in loss of life, serious injury to personnel or public, or damage to property due to the material or equipment involved or the nature of the operation/activity itself.

A.19 **Imminent Danger** - Condition or practice that could be reasonably expected to cause death or serious physical harm immediately or in the near term. These are classified as Risk Assessment Code (RAC) 1 using the typical NASA risk assessment matrix.

A.20 **Mission Assurance** - Providing increased confidence that applicable requirements, processes, and standards for the mission are being fulfilled.

A.21 **Mission Success** - Meeting all mission objectives and requirements for performance and safety.

A.22 **NASA Safety Standard (NSS)** - A NASA safety document that requires conditions, or the adoption or use of one or more practices, means, methods, operations, or processes reasonably necessary or appropriate to provide for safe employment and places of operation. The document is promulgated by the NASA Office of Safety and Mission Assurance and implemented and enforced by the Center Safety and Mission Assurance organizations.

A.23 **Occupational Safety and Health Administration (OSHA)** - The Federal agency which promulgates and enforces workplace safety regulations and guidance.

A.24 **Operational Safety** - That portion of the total NASA safety program dealing with safety of personnel and equipment during launch vehicle ground processing, normal industrial and laboratory operations, use of facilities, special high hazard tests and operations, aviation operations, use and handling of hazardous materials and chemicals from a safety viewpoint.

A.25 **Oversight/Insight** - The transition in NASA from a strict compliance-oriented style of management to one which empowers line managers, supervisors, and employees to develop better solutions and processes.

A.26 **Pressure Vessel** - Any vessel used for the storage or handling of a fluid under positive pressure. A pressure system is an assembly of components under pressure; e.g., vessels, piping, valves, relief devices, pumps, expansion joints, gages.

A.27 **Programs** - For the purposes of this NPR the term "programs" shall be interpreted to include programs, projects, and acquisitions.

A.28 **Range Safety** - Application of safety policies, principles, and techniques to ensure the control and containment of flight vehicles to preclude an impact of the vehicle or its pieces outside of predetermined boundaries from an abort which could endanger life or cause property damage. Where the launch range has jurisdiction, prelaunch preparation is included as a safety responsibility.

A.29 **Risk** - The combination of (1) the probability (qualitative or quantitative) of experiencing an undesired event, (2) the consequences, impact, or severity that would occur if the undesired event were to occur and (3) the uncertainties associated with the probability and consequences.

A.30 **Risk Management** - An organized, systematic decision-making process that efficiently identifies, analyzes, plans, tracks, controls, communicates, and documents risk to increase the likelihood of achieving project goals.

A.31 **Risk (Safety) Assessment** - Process of qualitative risk categorization or quantitative risk (safety) estimation, followed by the evaluation of risk significance.

A.32 **Safety** - Freedom from those conditions that can cause death, injury, occupational illness, damage to or loss of equipment or property, or damage to the environment. In a risk-informed context, safety is an overall mission and program condition that provides sufficient assurance that accidents will not result from the mission execution or program implementation, or, if they occur, their consequences will be mitigated. This assurance is established by means of the satisfaction of a combination of deterministic criteria and risk criteria.

A.33 **Safety Analysis** - Generic term for a family of analyses, which includes but is not limited to, preliminary hazard analysis, system (subsystem) hazard analysis, operating hazard analysis, software hazard analysis, sneak circuit, and others.

A.34 **Safety Oversight** - Maintaining functional awareness of program activities on a real-time basis to ensure risk acceptability.

A.35 **Safety Program** - The implementation of a formal comprehensive set of safety procedures, tasks, and activities to meet safety requirements, goals, and objectives.

A.36 **Serious** - When used with "hazard," "violation," or "condition," denotes there is a substantial probability that death or serious physical harm could result.

A.37 **System Safety** - Application of engineering and management principles, criteria, and techniques to optimize safety and reduce risks within the constraints of operational effectiveness, time, and cost throughout all phases of the system life cycle.

A.38 **Vacuum System** - An assembly of components under vacuum, including vessels, piping, valves, relief devices, pumps, expansion joints, gages, and others.

A.39 **Variance** - An authorization for temporary relief in advance from a specific requirement and is requested during the formulation/planning/design stages of a program/project operation to address expected situations.

A.40 **Waiver** - A variance that authorizes departure from a specific safety requirement where a certain level of risk has been documented and accepted.

Appendix B – Acronyms

AHJ	Authority Having Jurisdiction
ANSI	American National Standards Institute
CFR	Code of Federal Regulations
DASHO	Designated Agency Safety and Health Official
DOD	Department of Defense
DOL	Department of Labor
EO	Executive Order
FOM	Facility Operations Manager
GDMS	Goddard Directives Management System
GSFC	Goddard Space Flight Center
HQ	Headquarters
IRIS	Incident Reporting Information System
JHA	Job Hazard Analysis
LLIS	Lessons Learned Information System
NASA	National Aeronautics and Space Administration
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NPD	NASA Policy Directive
NPR	NASA Procedural Requirements
NRRS	NASA Records Retention Schedules
NSRS	NASA Safety Reporting System
NSS	NASA Safety Standard
OSHA	Occupational Safety and Health Administration
OS&H	Occupational Safety & Health
PPE	Personal Protective Equipment
PV/S	Pressure Vessels and Pressurized Systems
RAC	Risk Assessment Code
SMA	Safety and Mission Assurance
STD	Federal Standard
WFF	Wallops Flight Facility

CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	2/21/06	This document replaces the cancelled GMI 1700.2C, Goddard Space Flight Center Health and Safety Program.
A	11/10/10	Administratively extended
B	11/8/12	Document updated to reflect current standards and policies.